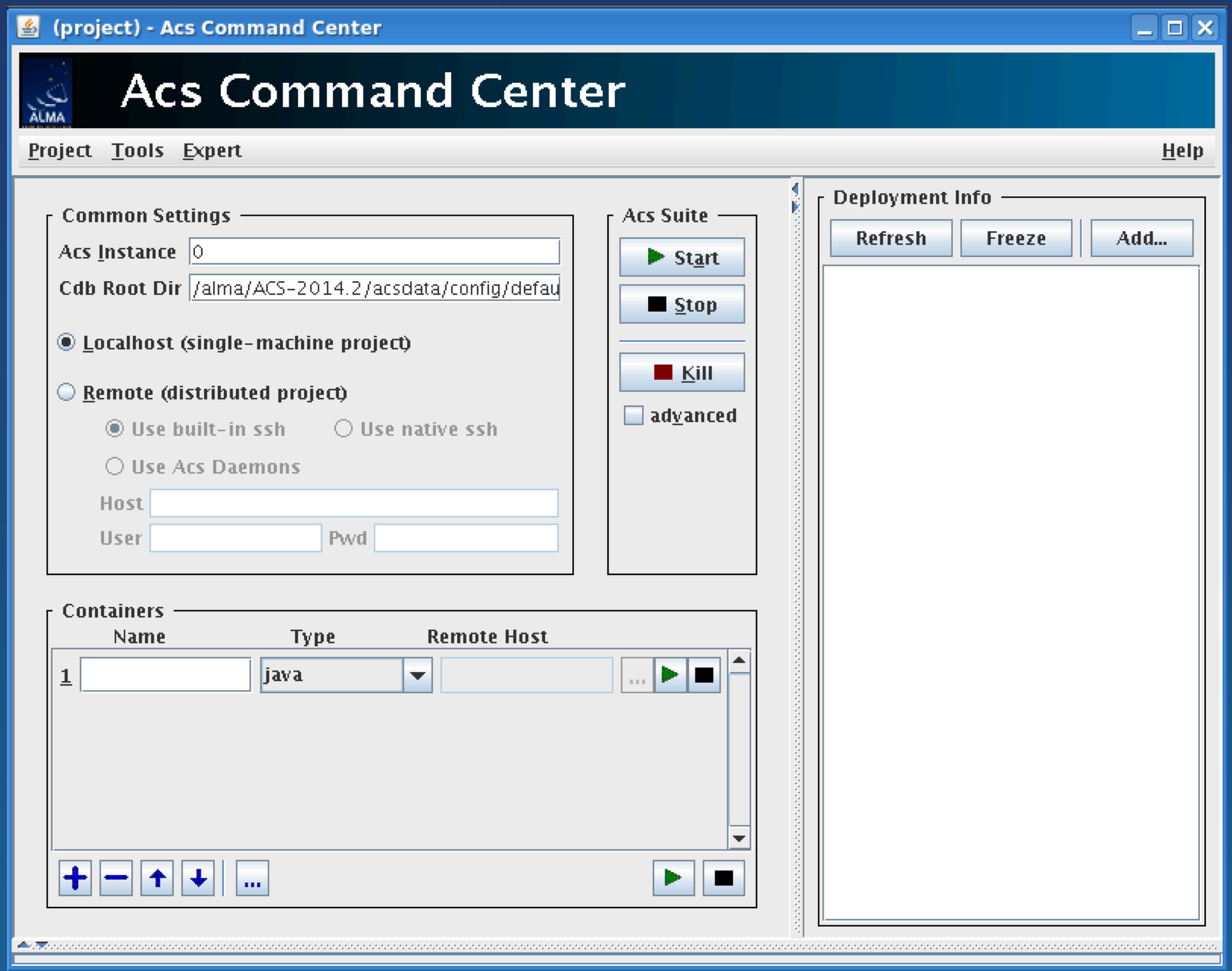
ALMA Common Software

Basic Track

A walk through ACS functionality

ACS Command Center: starting/stopping ACS



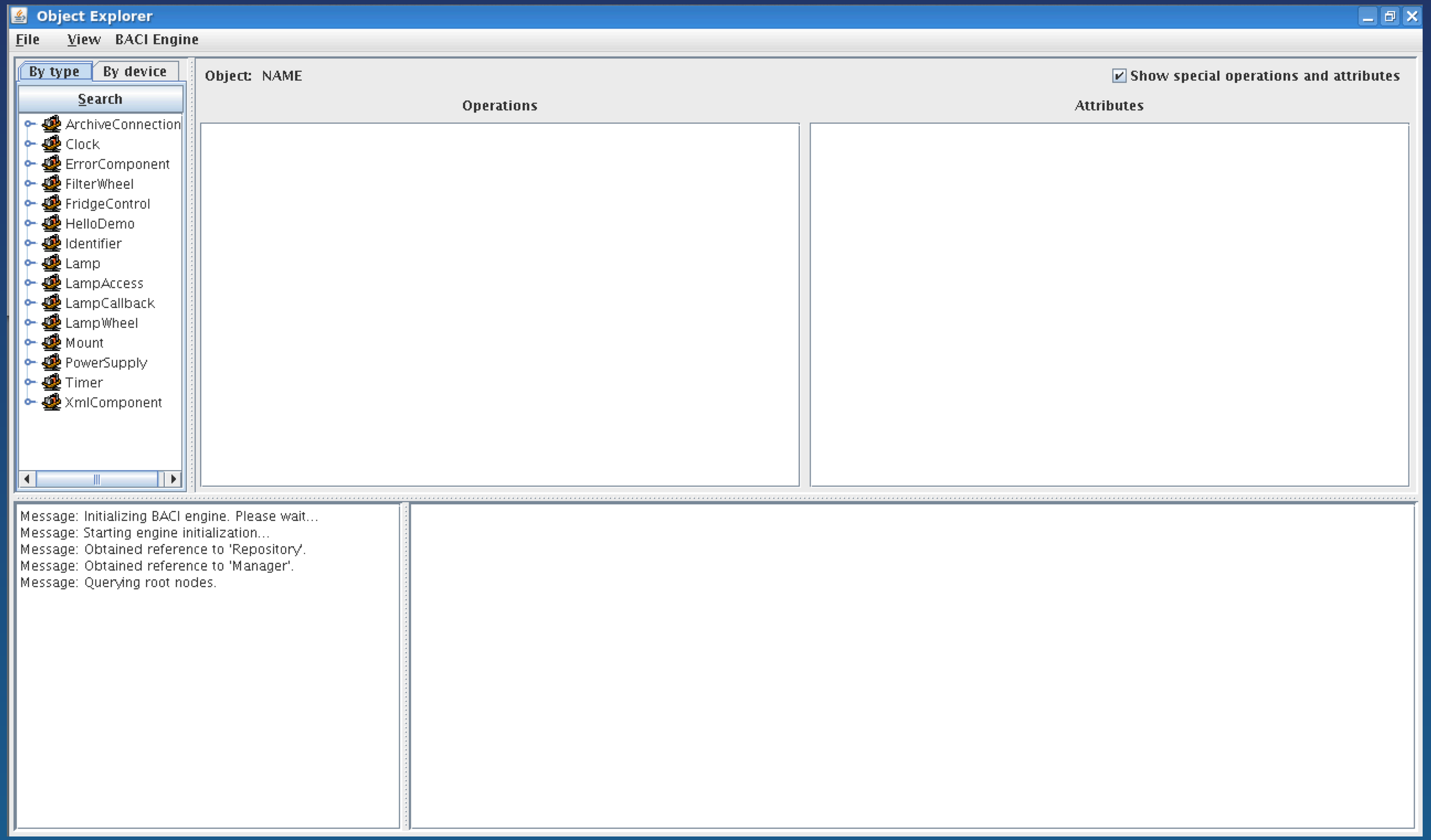
ACS Services

- Every application needs a set of **core** integration infrastructure services, like for instance:
  - messaging (request/response and publish/subscribe)
  - logging
  - error management
  - alarms
  - configuration data
- In ACS these services have been identified as essential for the application domain
- These have been implemented mostly on top of standard CORBA Services (DDS may replace CORBA in some/several of them)
- The ACS work consists in wrapping the implementation to simplify their usage by the application developers
- The following slides will present some of services provided by the ALMA Common Software

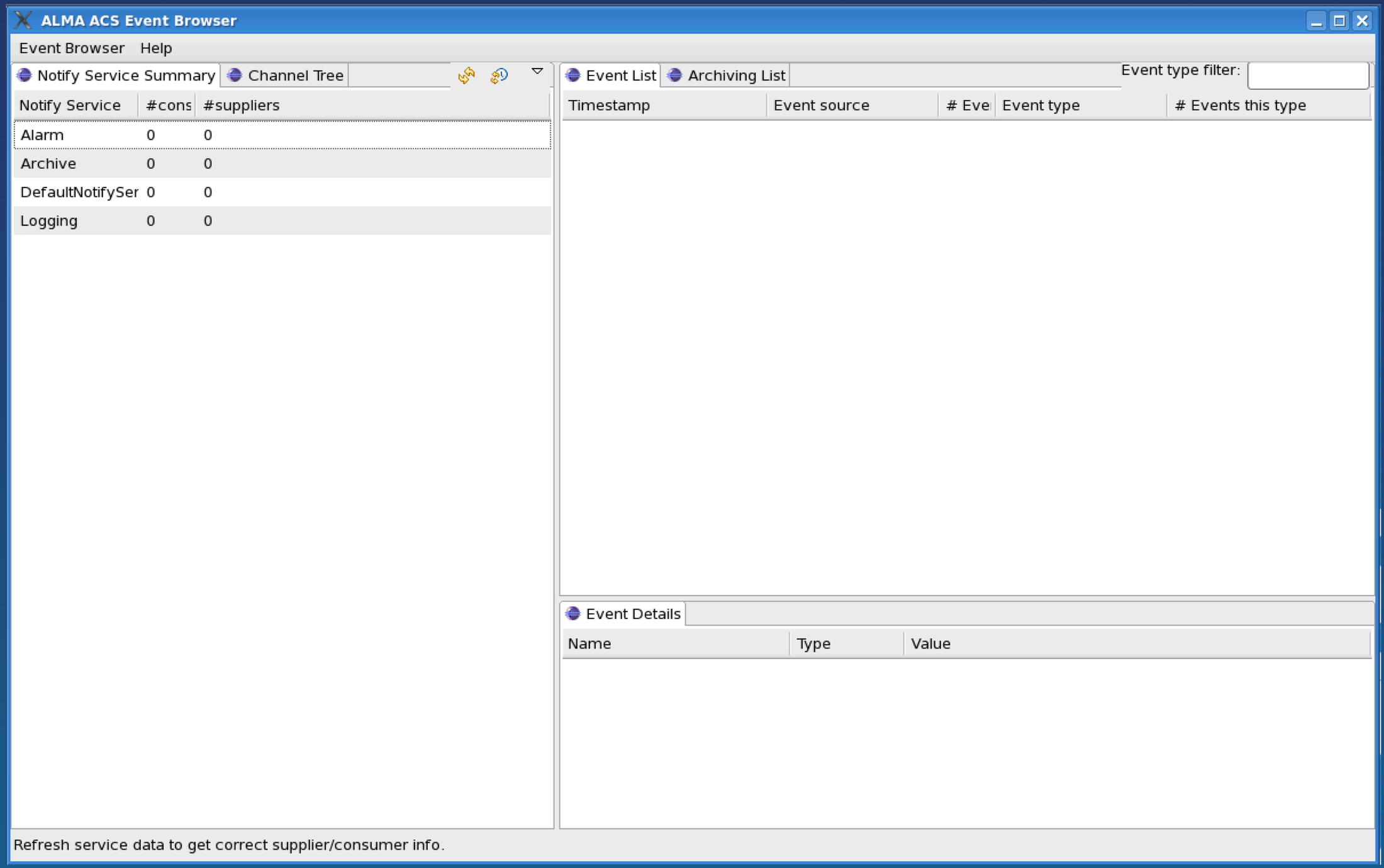
Messaging

- ✧ Enables the communication between system components
- ✧ Supports both request-response and publish-subscribe message patterns
  - ✧ anonymous publish/subscribe data transfer is seen more and more as a key need for the messaging system
- ✧ In ACS:
  - ✧ CORBA messaging provides request-response
  - ✧ CORBA Notify Service provides publish-subscribe
    - ✧ DDS can replace the Notify Service offering many advantages

Messaging tools: object explorer



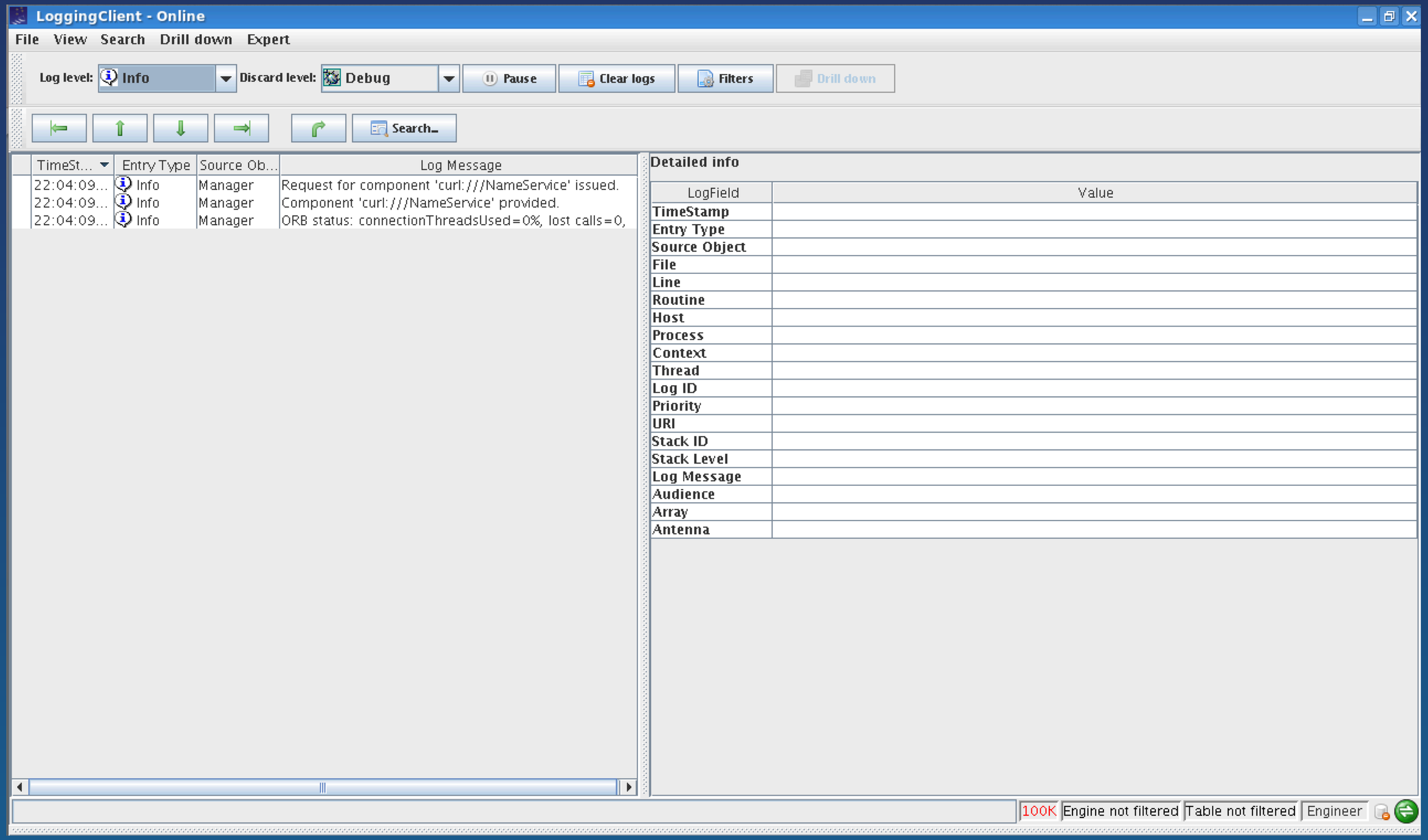
Messaging tools: event browser



Logging system

- ✧ Logging is fundamental for the operation of distributed systems, in order to understand and keep track of what happens between concurrent components
- ✧ Logging is used to publish any kind of status and diagnostic information for interested clients and for archival
- ✧ The current implementation is based on the Notification Service
- ✧ There is also a prototype implementation based on DDS

Logging tools: jlog logging client



Error System

- ✧ Provides a unified way of dealing with errors through the system
- ✧ CORBA supports “distributed” exceptions
- ✧ The ACS Error System provides additionally the following features:
  - ✧ Error format standardisation
  - ✧ Error handling design patterns
  - ✧ Error trace
  - ✧ Error logging
  - ✧ Synchronous and asynchronous error handling
  - ✧ Error browsing and definition tools

Alarm System

- ✧ Deals with **abnormal** situations
  - ✧ Fault states (FS)
  - ✧ Range from severe alarms to warning states
- ✧ Provides
  - ✧ FS collection, analysis and distribution, definition and archiving
  - ✧ FS reduction
  - ✧ Dedicated alarm consoles
- ✧ The ACS alarm system is a porting of the CERN LASER system

Configuration Database

- The ACS Configuration Database (CDB) addresses: defining, accessing and maintaining the configuration of a system
- For each component in the system, there might be a set of static (or quasi-static) configuration parameters that have to be configured in a persistent store and read when the component is started up or re-initialized.
- This includes the “deployment structure” of the system, i.e., which statically deployed Components are part of the system and their inter-relationships
- This information is used by the component/container infrastructure in runtime

Configuration Database Browser

Configuration Database Browser

File Edit Administration

Refrest CDB Tree

CURRENT LOCATION: /root/MACI/Containers/bilboContainer

- root
  - MACI
    - Containers
      - bilboContainer
        - Autoload
        - LoggingConfig
      - frodoContainer
      - aragornContainer
    - Managers
    - Channels
    - Components
  - alma
    - MOUNT3
    - TEST_PS_10
    - TEST_PS_1
    - TEST_PS_4
    - MOUNT5
    - LAMPWHEEL1
    - TEST_PS_14
    - MOUNT2
    - TEST_PS_18
    - TEST_PS_2
    - TEST_PS_9
    - PBUMP_B_01
    - TEST_PS_8
    - TEST_PS_17
    - PBUMP_B_02
    - TEST_PS_3

Save Changes to XML record | Reset Data

Table View | XML View

ATTRIBUTE NAME	ATTRIBUTE VALUE
DALtype	DAL
ImplLang	cpp
ManagerRetry	10
Recovery	true
ServerThreads	5
Timeout	20.0
UseIFR	1
xmlns	urn:schemas-cosylab-com:Container:1.0
xmlns:baci	urn:schemas-cosylab-com:BACI:1.0
xmlns:cdb	urn:schemas-cosylab-com:CDB:1.0
xmlns:log	urn:schemas-cosylab-com:LoggingConfig:1.0
xmlns:xsi	http://www.w3.org/2001/XMLSchema-instance

Sampling System

- ✧ Sampling of any Property
- ✧ High sustained frequency
- ✧ Optimized data transport
- ✧ Simultaneous sampling
- ✧ Plotting GUI

Component simulation

- Why simulation?
  - Distributed development
  - Features or entire subsystems not yet available
  - Test a subsystem in isolation
- Simulation of Components from IDL interface specification
- Dumb default or “intelligent” simulation

Questions?

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